REMARKS

The applicants appreciate the Examiner's thorough examination of the application and request reexamination and reconsideration of the application in view of the following remarks.

Applicants have amended claim 24 to correct minor typographical errors. These amendments are not made for reasons related to patentability.

The applicants appreciate and thank the Examiner for allowing claims 50-54.

The Examiner rejects claims 1, 4-7, 9, 15, 17, 35, 36, 38, 40, 42, 55 and 56 under 35 U.S.C. §102(b) as being anticipated by Takeuchi *et al.* (U.S. Patent No. 6,091,182) or Bernstein (U.S. Patent No. 6,323,580). The Examiner also rejects claims 10-14 and 19-34 under 35 USC §103(a) as being unpatentable over Takeuchi *et al.* or Bernstein.

The applicants' claimed flexural plate wave sensor utilizes a unique comb pattern over the flexural plate with drive teeth disposed across the entire length of the flexural plate, the comb pattern is aligned with eigenmodes of the flexural plate to reduce the number of eigenmodes excited in the plate and simplifies the operation and design of the flexural plate wave sensor. When the comb pattern is aligned with all the eigenmodes of the flexural plate the result is the number of eigenmodes excited is a single eigenmode, which results in a single pronounced peak. See applicants' specification, page 14, lines 3-17.

The claimed flexural plate wave sensor as recited in applicants' claim 1 includes: 1) a flexural plate having a length and a width, and 2) a comb pattern over the flexural plate with drive teeth disposed across the entire length of the flexural plate, the comb pattern aligned with eigenmodes of the flexural plate to reduce the number of eigenmodes

excited in the plate and simplifies the operation and design of the flexural plate wave sensor.

In contrast, Takeuchi does not teach, suggest, or disclose a comb pattern over a flexural plate with drive teeth disposed across the entire length of the flexural plate and that is aligned with eigenmodes of the flexural plate.

Instead, Takeuchi teaches a pair of electrodes 22a, 22b that form an outer circumferential configuration which is circular:

> The piezoelectric/electrostrictive layer 20 also has a circular planar configuration (see chain lines). The pair of electrodes 22a, 22b form an outer circumferential configuration which is circular as well (see solid lines). (Col. 12, lines 1-5, emphasis added).

Takeuchi also teaches that the pair of electrodes 22a, 22b formed on the piezoelectric layer have a spiral planar configuration as shown by:

> The pair of electrodes 22a, 22b formed on the piezoelectric/electrostrictive layer 20 have, for example, a spiral planar configuration as shown in FIG. 4, in which the pair of electrodes 22a, 22b are parallel to one another and separated from each other to form a spiral structure composed of several turns. (Col. 12, lines 13-18, emphasis added).

Clearly the pair of electrodes 22a and 22b as taught and disclosed by Takeuchi are not a comb pattern that includes drive teeth disposed across the entire length of the flexural plate that are aligned with eigenmodes of the flexural plate. A comb is defined as a flat device with narrow pointed teeth on one edge. *See*, for example, dictionary.com. There is no teaching, suggestion, or disclosure anywhere in the entire disclosure of Takeuchi that electrodes 22a and 22b would be aligned with eigenmodes of the flexural plate.

Accordingly, for the reasons stated above, Takeuchi does not teach, suggest, or disclose each and every element of the applicants' invention as recited in claim 1, namely, a comb pattern over the flexural plate with drive teeth disposed across the entire length of the flexural plate and aligned with eigenmodes of the flexural plate as recited in applicants' independent claim 1. Applicants' independent claims 35, 36, 55 and 56 similarly recite a comb pattern over the flexural plate with drive teeth and/or sense teeth disposed across the entire length of the flexural plate and aligned with eigenmodes of the flexural plate. Accordingly, independent claims 1, 35, 36, and 55 and 56 are patentable and allowable under 35 USC §102(b) over Takeuchi. Because claims 4-7, 9, 15, 17, and 38, 40 and 42 depend from allowable base claims, these claims are allowable under 35 USC §102(b) over Takeuchi for the same reasons.

Bernstein also does not teach, suggest, or disclose a flexural plate wave sensor that includes a comb pattern over the flexural plate with drive teeth disposed across the entire length of the flexural plate and aligned with eigenmodes of the flexural plate to reduce the number of eigenmodes excited in the plate to simplify the operation and design of the flexural plate wave sensor. Instead, Bernstein relies on a ferroic transducer that includes a ferroic film sandwiched between two metal electrodes and an electric field:

> There the transducer 30 includes a ferroic film 32 which is sandwiched between two planar metal electrodes 34 and 36 and the electric field as indicated by arrows 38 extends across the plane of film 32, not substantially parallel to it. (Col. 3, lines 61-65)

Bernstein teaches and discloses varying the spacing of the fingers of electrodes so that the same voltage is generated by the electrical pair to accommodate for varying stresses on the diaphragm:

> To optimize the efficiency of the transducer the finger electrode spacing is varied so that the same voltage is generated between each electrical pair. This might be necessary when, for example, the stress on a diaphragm might not be uniform, hence the electric field (which is proportional to the stress) is non-uniform. Equally spaced finger electrodes would result in some inter-electrical gaps generating larger voltages than other gaps. The net result would be current flowing from one part of the transducer to another part, which is inefficient. High stress regions use closely spaced electrodes, while lower stress regions use electrode fingers further apart. (Col. 5, line 63 - Col. 6, line 8)

Moreover, nowhere in the entire disclosure of Bernstein is there any teaching, suggestion, or disclosure of a comb pattern over the flexural plate with drive teeth disposed across the entire length of the flexural plate and aligned with eigenmodes of the flexural plate to reduce the number of eigenmodes excited in the plate.

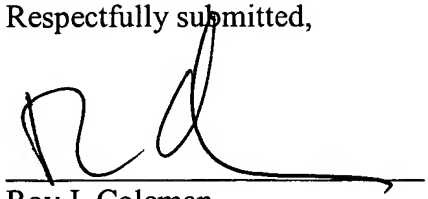
Accordingly, for the reasons shown above, Bernstein does not teach, suggest, or disclose each and every element of the applicants' invention recited in claim 1, namely, a comb pattern over the flexural plate with drive teeth disposed across the entire length of the flexural plate and aligned with eigenmodes of the flexural plate to reduce the number of eigenmodes excited in the plate as recited in applicants' independent claim 1. Accordingly, independent claims 1, 35, 36, and 55 and 56 are patentable and allowable under 35 USC §102(b) over Bernstein. Because claims 4-7, 9, 15, 17, and 38, 40 and 42 depend from allowable base claims, these claims are allowable under 35 USC §102(b) over Bernstein for these same reasons. As stated above, Takeuchi *et al.* and Bernstein do not teach or disclose each and every element of applicants' independent claim 1. Because claims 10-14 and 19-34 depend from claim 1, these claims are allowable and patentable under 35 USC §103(a) over Takeuchi *et al.* and Bernstein.

The Examiner rejects claims 2, 8, 16, 18, 37, 39, 41 and 43 under 35 USC §103(a) as being unpatentable over Prior Art in view of Takeuchi *et al.* or Bernstein. As stated above, Takeuchi *et al.* and Bernstein do not teach, suggest or disclose each and every element of applicants' independent claims 1, 35 and 36. Clearly the prior art of record also does not teach, suggest or disclose a comb pattern over the flexural plate with drive teeth disposed across the entire length of the flexural plate and aligned with eigenmodes of the flexural plate to reduce the number of eigenmodes excited in the plate as recited in applicants' independent claims 1, 35 and 36. Because claims 2, 8, 16, 18, 37, 39, 41 and 43 depend from allowable base claims, the Examiner's rejection of these claims is traversed.

Each of the Examining Attorney's rejections has been addressed or traversed. Accordingly, it is respectfully submitted that the application is in condition for allowance. Early and favorable action is respectfully requested.

If for any reason this Response is found to be incomplete, or if at any time it appears that a telephone conference with counsel would help advance prosecution, please telephone the undersigned or his associates collect in Waltham, Massachusetts, at (781) 890-5678.

Respectfully submitted,



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